UNITED STATES PATENT AND TRADEMARK OFFICE

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STEVENS DAVIS LLP
1615 L STREET NW
SUITE 850
WASHINGTON, DC 20036

EXAMINER
PHAN, TRI H

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 October 2004_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-36_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-5, 9-12, 18-23, 27-30 and 36_ is/are rejected.

7)☒ Claim(s) _6-8, 13-17, 24-26 and 31-35_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _10/15/2004_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Response to Communication(s)

1.   This office action is in response to the Application filed on October 15th, 2004. Claims 1-
36 are now presented for examination.

Priority

2.   Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers
have been placed of record in the file.

Claim Objections

3.   Claims 1-2, 20, 24 and 31 are objected to because of the following informalities:

In claim 1, line 7, "predetermined layers" should be corrected to -- predetermined layer --

.

In claim 2, line 2, "there is provided" should be changed to -- said communication
terminal apparatus further comprising -- to avoid unclear.

Also in claim 2, line 9, -- belonging to said lower layer -- should be insert after the
recitation "said plurality of processing units" for clarity.

In claim 20, line 2, "the" in front of "operation control unit" should be changed to -- an --
to avoid lack of antecedent basis.

In claim 24, line 4, "the" in front of "operation control unit" should be changed to -- an --
to avoid lack of antecedent basis.

Also in claim 24, line 5, "a" in front of "upper layer" should be changed to -- an -- .

In claim 31, line 6, "a" in front of "upper layer" should be changed to -- an -- .

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.   Claims 1-2, 5, 16 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

- Claim 1 recites the limitation "said predetermined layer" in lines 4-5. There is

insufficient antecedent basis for this limitation in the claim 1.

Also in claim 1, line 9, the recitation "said plurality of processing units" is vague and

unclear because the examiner is unclear and do not know whether the recitation belongs to

"lower layer" (see claim 1, lines 6-7) or "predetermined layer" (see claim 1, lines 9-10) of the

terminal apparatus' layers.

- Regarding claim 2, the recitation "... said operation control unit belonging to said lower

layer notifies, to the operation control unit belonging to said lower layer, availability information

..." (see claim 2, lines 6-8) is vague and indefinite because it is unclear why the operation

control unit is notifying available information to itself.

- Regarding claim 5, lines 5-6, the recitation "said operation control unit" is vague and

unclear because the examiner is unclear and do not know whether the recitation belongs to

"predetermined layer" (see claim 5, lines 2-3) or "lower layer" (see claim 5, lines 4-5).

- Claim 16 recites the limitation "said unification" in line 9. There is insufficient

antecedent basis for this limitation neither in the claim 16 nor in their parent claims.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

7.   Claims 1-5, 9-12, 18-23, 27-30, and 36 are rejected under 35 U.S.C. 102(e) as being

anticipated by **Ji et al.** (U.S.2003/0185233; hereinafter refer as 'Ji').

- In regard to claim 1, as best understood, **Ji** discloses *a communication terminal*

apparatus ('mobile computing device 430' in fig. 3) *comprising a plurality of layers*

hierarchically classified depending on different processing functions (for example see figs. 3-4A;

page 1, paras [0004-0005]), *said apparatus comprises*

a processing unit belonging to said predetermined layer ('IP processing 530' in fig. 4A;

wherein the IP processing belongs to the IP layer or Network layer, e.g. *"predetermined layer"*,

in TCP/IP layer model);

a plurality of processing units belonging to a lower layer among said predetermined

layer ('MAC processing 532' in fig. 4A; where the MAC processing belongs to the MAC layer

or data link layer, e.g. *"lower layer"*); and

an operation control unit ('link migration module LMM 510' of MALT in fig. 4A; for

example see page 5, para [0057], lines 1-5) *for controlling operation of said plurality of*

processing units belonging to said lower layer, said operation control unit belonging to said

predetermined layer (for example see fig. 4A; page 5, para [0057]; lines 9-19; wherein the LMM

controls MAC address mapping by MAC to IP binding operation through DBM 528), *wherein:*

said processing unit belonging to said predetermined layer can selectively use said

plurality of processing units belonging to said lower layer through control of said operation

control unit belonging to said predetermined layer (for example see figs. 3, 4A and 9; page 5,

para [0052]; pages 7-8, para [0081]; wherein IP address, i.e. IP processing, is mapped to different

MAC address, i.e. MAC processing as disclosed in page 5, para [0060], through MAC to IP

binding operation).

- Regarding claims 2 and 20, as best understood, **Ji** further discloses, *wherein said*

communication terminal apparatus has an operation control unit for controlling operation of

each of said plurality of processing units belonging to said lower layer, said operation control

unit belonging to said lower layer ('link sensing module LSM 514' of MALT in fig. 4A; for

example see page 6, para [0072]; wherein the LMM controls MAC address, i.e. MAC

processing, mapping by MAC to IP binding operation through DBM 528 as disclosed in page 5,

para [0057]) *and said operation control unit belonging to said lower layer notifies, to the*

operation control unit belonging to said predetermined layer, availability information indicating

whether each of said plurality of processing units is available or not ('link availability'; for

example see fig. 4A; page 5, para [0057], lines 19-21; page 6, para [0072]; wherein LSM

provides link availability to LMM for determining MAC address in performing MAC to IP

binding operation).

- In regard to claims 3 and 21, **Ji** further discloses an *information requesting means for*

requesting notification of said availability information to said operation control unit belonging

to said lower layer ('link sensing module LSM 514' in fig. 4A; for example see page 5, para

[0057], lines 19-21; page 6, para [0072]).

- Regarding claims 4 and 22, **Ji** further discloses an *information storage means for*

storing said availability information ('ARP 524' in fig. 4A; for example see page 9, para [0094];

wherein the ARP 524 stores/updates MAC address of the preferred interface via "update MAC to

IP mapping" command as disclosed in page 5, para [0057]; step 710 in fig. 6).

- In regard to claims 5 and 23, **Ji** further discloses, *wherein, when said operation control*

unit belonging to said predetermined layer receives notification of said availability information

from said operation control unit belonging to said lower layer (for example see fig. 4A; page 5,

para [0057], lines 19-21; page 6, para [0072]; wherein LSM provides link availability to LMM

for determining MAC address in performing MAC to IP binding operation), *said operation*

control unit refers to said availability information and controls selective use of one or more of

said available processing units belonging to said lower layer by said processing unit belonging

to said predetermined layer (for example see page 6, para [0072] through page 7, para [0074];

wherein the best link is selected through link availability provided from LSM).

- Regarding claims 9 and 27, **Ji** further discloses, *wherein said apparatus comprising an*

operation control unit for controlling operation of each of said plurality of processing units

belonging to said lower layer, said operation control unit belonging to said lower layer ('link

sensing module LSM 514' of MALT in fig. 4A; for example see page 6, para [0072]; wherein

the LMM controls MAC address, i.e. MAC processing, mapping by MAC to IP binding

operation through DBM 528 as disclosed in page 5, para [0057]); *and*

   said operation control unit belonging to said lower layer notifies, to said operation

control unit belonging to said predetermined layer, availability information to indicate whether

it is possible or not to use each of said plurality of processing units belonging to said lower layer

('link availability'), *band information to indicate a band securable in communication using each*

of said plurality of processing units belonging to said lower layer ('link quality' such as SNR,

QoS or traffic load), *and route information to indicate a connection target connectable in the*

communication using each of said plurality of processing units belonging to said lower layer

('link detection and selection' such as link technology or best link to use) *when said processing*

unit is available (for example see fig. 4A; page 5, para [0057], lines 19-21; pages 6-7, paras

[0072-0073]; wherein LSM provides link information to LMM for determining MAC address in

performing MAC to IP binding operation).

- In regard to claims 10 and 28, **Ji** further discloses an *information requesting means*

('link sensing module LSM 514' in fig. 4A) *for requesting notification of said band information*

('link quality' such as SNR, QoS or traffic load) *and/or said route information* ('link detection

and selection' such as link technology or best link to use) *in addition to said availability*

information ('link availability') *to said operation control unit belonging to said lower layer* (for

example see page 5, para [0057], lines 19-21; pages 6-7, paras [0072-0073]).

- Regarding claims 11 and 29, **Ji** further discloses an *information storage means for*

storing said route information ('prioritized list for preferred links' for storing link detection and

selection as disclosed in page 3, para [0023]) *in addition to said availability information.* ('ARP

524' in fig. 4A; for example see page 9, para [0094]; wherein the ARP 524 stores/updates MAC

address of the preferred interface via "update MAC to IP mapping" command as disclosed in

page 5, para [0057]; step 710 in fig. 6).

- In regard to claims 12 and 30, **Ji** further discloses, *wherein said operation control unit*

belonging to said predetermined layer controls selective utilization of one or more of said

available processing units belonging to said lower-layer by said processing unit belonging to

said predetermined layer (for example see fig. 4A; page 5, para [0057], lines 19-21; page 6, para

[0072]; wherein LSM provides link information to LMM for selecting MAC address in

performing MAC to IP binding operation) *by referring to said band information* ('link quality'

such as SNR, QoS or traffic load) *and/or said route information* ('link detection and selection'

such as link technology or best link to use) *in addition to said availability information* ('link

availability') *when said availability information is notified from said operation control unit*

belonging to said lower layer (for example see page 5, para [0057], lines 19-21; pages 6-7, paras

[0072-0073]).

- Regarding claims 18 and 36, **Ji** further discloses, *wherein said predetermined layer is*

one or more selected from a data link layer of the layer 2 defined in an OSI reference model, a

network layer of the layer 3, a transport layer of the layer 4, a session layer of the layer 5 and a

presentation layer of the layer 6 (for example see figs. 3-4A; where stack layers are provided).

- In regard to claim 19, **Ji** discloses *a communication control method in a communication*

terminal apparatus ('mobile computing device 430' in fig. 3)*, comprising a plurality of layers*

hierarchically classified depending on different processing functions (for example see figs. 3-4A;

page 1, paras [0004-0005])*, wherein:*

    an operation control unit ('link migration module LMM 510' of MALT in fig. 4A)

belonging to a predetermined layer among said plurality of layers (for example see fig. 4A; page

5, para [0057], lines 1-5; wherein the LMM belongs to Network layer, e.g. *"predetermined*

layer", of other layers in TCP/IP layer model) *selectively utilizes a plurality of processing units*

belonging to a lower layer of said predetermined layer (for example see fig. 4A; page 5, para

[0057]; lines 9-19; wherein the LMM controls MAC address mapping, i.e. MAC processing units

in MAC layer, through MAC to IP binding operation in DBM 528) *and performs communication when said communication terminal apparatus carries out communication* (for example see page 6, para [0069]).

Allowable Subject Matter

8.   Claims 6-8, 13-17, 24-26, and 31-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

        The prior art of record, considered individually or in combination, fails to fairly show or suggest the claimed invention of base claims 1, 19 with further novel and unobvious limitations as following:

        - a processing unit and an operation unit for controlling the operation of processing unit in upper layer based on the availability information provided from lower layer to predetermined layer, and from predetermined layer to upper layer as recited in the dependent claims 6 or 13.

        - wherein availability information is notified from different operation control units in hierarchical layers for utilizing the processing units in lower layer of the terminal apparatus as recited in the dependent claims 24 and 31.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sambamurthy et al. (U.S.6,108,713), **Vepa et al.** (U.S.6,560,630) and **Diener et al.** (U.S.7,269,151) are all cited to show devices and methods for controlling data transmission for different types or protocols through layers in the communication models, which are considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (571) 272-3179.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(571) 273-8300

Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tri H. Phan/

Examiner, Art Unit 2616

April 25, 2008